**WHAT IS CLAIMED IS:**

1. A toughening agent comprising an epoxy-extended polyacrylate, wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a number average molecular weight in the range of about 1000 up to about 10,000, an average functionality of at least about 2.2, and a polydispersity in the range of about 1.05 up to about 5.

2. The toughening agent of claim 1 wherein the functionality of the polyacrylate from which the epoxy-extended polyacrylate is derived is selected from the group consisting of a carboxylic acid, an amine, an anhydride, an hydroxy group, and a phenolic group.

3. The toughening agent of claim 1 wherein the epoxy-extended polyacrylate is prepared by reacting a carboxylic acid functionalized polyacrylate with a multi-functional epoxy monomer.

4. The toughening agent of claim 3 wherein the carboxylic acid functionalized polyacrylate is selected from poly-functional or branched polymers prepared by copolymerizing alkyl acrylate(s) with poly-ol polyacrylate(s) in the presence of a chain transfer agent, or from carboxylic acid functionalized branched polyacrylates prepared by polymerization of blends of mono acrylates and divinyl branching agents in the presence of carboxylic acid functionalized chain transfer agents and/or carboxylic acid functionalized initiators.

5. The toughening agent of claim 3 wherein the multi-functional epoxy monomer is selected from the group consisting of bisphenol F diglycidyl ether, bisphenol A diglycidyl ether, 4-vinyl-1-cyclohexene diepoxide, butanediol diglycidyl ether, neopentylglycol diglycidyl ether, 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexanecarboxylate, limonene diepoxide, hexanediol diglycidyl ether, trimethylolpropane triglycidyl ether, aniline diglycidyl ether, diglycidyl ether of propylene glycol, cyanuric acid triglycidyl ether, ortho-phthalic acid diglycidyl ether, diglycidyl ester of linoleic dimer acid, dicyclopentadiene diepoxide, diglycidyl ether of tetrachloro bisphenol A, 1,1,1-tris(p-hydroxyphenyl)ethane glycidyl ether, tetra glycidyl ether of tetrskis(4-

hydroxyphenyl)ethane, epoxy phenol novolac resins, epoxy cresol novolac resins, and tetraglycidyl-4,4'-diaminodiphenylmethane.

6. The toughening agent of claim 3 wherein a stoichiometric excess of the multi-functional epoxy monomer is employed in the preparation of the epoxy-extended polyacrylate.

7. The toughening agent of claim 6 wherein a sufficient excess of the multi-functional monomer is employed to prevent gellation of the reaction mixture.

8. The toughening agent of claim 2 further comprising unreacted multi-functional epoxy monomer.

9. The toughening agent of claim 3 further comprising unreacted multi-functional epoxy monomer.

10. The toughening agent of claim 1 wherein the epoxy extension is linked to the polyacrylate by a linker selected from the group consisting of:

-Z-, -W-, -Z-W-, -W-Z-, –W-Z-W-,
and combinations of any 2 or more thereof,

wherein:

each Z is independently alkylene, substituted alkylene, cycloalkylene, substituted cycloalkylene, heterocyclic, substituted heterocyclic, oxyalkylene, substituted oxyalkylene, alkenylene, substituted alkenylene, arylene, substituted arylene, alkarylene, substituted alkarylene, aralkylene or substituted aralkylene, and

each W is independently ester, reverse ester, thioester, reverse thioester, amide, reverse amide, silyl, carbonate, or carbamate.

11. The toughening agent of claim 1 wherein the polyacrylate from which the epoxy-extended polyacrylate is derived is liquid.

12. The toughening agent of claim 1 wherein the epoxy-extended polyacrylate is a liquid.

13. The toughening agent of claim 1 wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a functionality of at least about 2.5.

14. The toughening agent of claim 1 wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a number average molecular weight in the range of about 1,000 up to 5,000.

15. The toughening agent of claim 1 wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a branched structure.

16. The toughening agent of claim 1 wherein the principle repeat unit of the polyacrylate from which the epoxy-extended polyacrylate is derived is selected from the group consisting of n-butyl acrylate, 2-ethylhexyl acrylate, and isooctyl acrylate.

17. The toughening agent of claim 1 wherein the viscosity of the epoxy-extended polyacrylate falls in the range of about 5-500 Pascal-seconds at 25°C.

18. The toughening agent of claim 1 wherein the viscosity of the epoxy-extended polyacrylate falls in the range of about 20-200 Pascal-seconds at 25°C.

19. A method to improve the fracture toughness of an epoxy-based adhesive composition, the method comprising adding to the adhesive composition an effective amount of a toughening agent comprising an epoxy-extended polyacrylate, wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a number average molecular weight in the range of about 1000 up to about 10,000, an average functionality of at least about 2.2, and a polydispersity in the range of about 1.05 up to about 5.

20. An adhesive formulation comprising:

a curable epoxy resin,

a curing agent,

at least one toughening agent comprising an epoxy-extended polyacrylate, wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a number average molecular weight in the range of about 1000 up to about 10,000, an average functionality of at least about 2.2, and a polydispersity in the range of about 1.05 up to about 5; and

optionally, a filler.

21. The adhesive formulation of claim 20 wherein the formulation contains substantially no latent curing agent; and the cure onset temperature of the curable epoxy resin is less than about 220°C.

22. The adhesive formulation of claim 20 wherein said curing agent is selected from the group consisting of anhydrides, amines, imidazoles, amides, thiols, carboxylic acids, phenols, dicyandiamide, urea, hydrazine, hydrazide, amino-formaldehyde resins, melamine-formaldehyde resins, amine-boron trihalide complexes, quaternary ammonium salts, quaternary phosphonium salts, tri-aryl sulfonium salts, di-aryl iodonium salts, diazonium salts, and combinations of any two or more thereof.

23. A method for adhesively attaching a device to a substrate, the method comprising dispensing an adhesive formulation according to claim 10 onto a substrate and/or a device or between the substrate and the device to form an assembly, and exposing the assembly to conditions sufficient to cure the adhesive.

24. An assembly produced by the method of claim 23.

25. A method for adhesively attaching a first article to a second article, the method comprising:

(a) applying a formulation according to claim 10 to the first article,

(b) bringing the first article and the second article into intimate contact to form an assembly wherein the first article and the second article are separated only by the adhesive formulation applied in step (a), and thereafter,

(c) subjecting the assembly to conditions suitable to cure the adhesive formulation.

26. An assembly produced by the method of claim 25.

27. A method for encapsulating an electronic component, the method comprising:
applying a formulation according to claim 10 to the component, and
curing the formulation.

28. An article prepared according to the method of claim 27.

29. A method for encapsulating an electronic component, the method comprising curing a formulation according to claim 10 after application of the composition to the component.

30. An article prepared according to the method of claim 29.

31. An article comprising an electronic component adhesively attached to a circuit board, wherein the electronic component is adhesively attached to the board by a cured aliquot of a formulation according to claim 10.

32. A cured aliquot of a formulation according to claim 10.

33. A method for preparing a toughening agent comprising an epoxy-extended polyacrylate, wherein the polyacrylate from which the epoxy-extended polyacrylate is derived has a number average molecular weight in the range of about 1000 up to about 10,000, an average functionality of at least about 2.2, and a polydispersity in the range of about 1.05 up to about 5, the method comprising subjecting a neat mixture of the polyacrylate and a multi-functional epoxy monomer to a temperature in the range of about 100 up to about 150°C for a time in the range of about 1 up to about 24 hours in the substantial absence of a catalyst.